TRMM Flight Operations Summary

May 11, 1999

FOT Overview

- Key Issues to be discussed
  - FOT staffing and project status
  - RCS catbed on time
  - Solar array parking status
  - CERES operational change status
  - Y2K conversion status
  - Subsystem overview

FOT Overview

- Operations Status - Engineering Staff
  - Flight Ops Summary - Lou Kurzmiller
  - Training and Certification Status - Ave Kludze
  - Thermal & Electrical - Ave Kludze
  - RCS - Andy Calloway
  - Deployables - Joe Kowalski
  - ACS, FDS, C&DH, & RF - Ed Weidner
  - Power, LIS, & CERES - Candace Shoemaker
  - VIRS - Ave Kludze
  - TMI & PR - Joe Kowalski
  - Ground System & Y2K upgrade - Ed Weidner

Flight Operations Summary

- Staffing
  - FOT Manager, Mr. Jeff Volosin, left the team: 01 May
  - New Console Analyst doing well
  - Hiring of 9th Console Analyst being pursued
    - Resulting from Risk Assessment analysis
  - Open Plan Desktop software
    - CSOC Costing Method from Lockeed Martin
    - TRMM being used as a template
- IMOC
  - IMOC Ops Concept under development
  - TRMM baseline mission set - rehosting to SCS-21 still being discussed

Flight Operations Summary

- Risk Assessment
  - Current effort is focused on establishing baseline process maps
  - ATSC Risk*control* tool being used as part of effort
  - MOCR process reviewed & modified to reduce risk of human error
- Overall Support in April
  - Supported 483 SN events -- including 2 ‘generic’ late acquisitions
  - All available science and housekeeping data was recovered

Training

- Status:
  - Todd Stewart is now fully certified as a Spacecraft Analyst
  - Checklist developed for Procedure testing
    - » To make the MOCR and CM process of new and existing procedures more efficient, uniform and reliable

Thermal Subsystem

- Thermal subsystem performed nominally
- High thermal conditions experienced on solar array drive remains a serious concern
- No open Anomaly or Event Reports
- One year plots have all been reviewed
  - No outstanding issues

Electrical Subsystem

- Electrical subsystem performed nominally
- No open Anomaly or Event Reports
- One year plots have all been reviewed
  - No outstanding issues

RCS Subsystem

- RCS performed nominally through Delta-V maneuvers #89 - #94
- Fuel remaining is 736.53 kg of hydrazine
- All RCS operating temperatures remain nominal
- All heater operations remain nominal
- No Open RCS Anomaly or Event Reports
- Open Issues or Projects:
  - Catbed Heaters currently turned on 91 minutes prior to first burn
  - Trending shows this can be reduced to 40-45 min to reduce power drain on the batteries and still reach required temperature safely

Deployables Subsystem

- -Y solar array reached max of 37.3° C (yellow high 42° C) for the month of April
- Parking -Y solar array at 30° before it fails still being pursued
  - ACS actions are being finalized
- Finalizing contingency plans for possible array failure
  - Failure identification checksheet completed

ACS Subsystem

- Closed Issues during month of April
  - FDCs 81-84 were re-enabled on 99-102
  - ACS Table #84 (Ephemeris Coefficients Table) uplinked on 99-124
    - » Contains S/C mass needed for ephem propagation
- Open Issues
  - New DSS calibrations might be needed based off Yaw Updates becoming larger; awaiting FDF analysis for verification
  - ESA fogging
    - » ACS looking into preliminary options such as adjusting ESA biases
    - » Degradation in pointing accuracy that would dictate a change
  - AR #60 - TDRS EPVs still sometimes fail in position and velocity following TDRS maneuvers
    - » New table 85 with updated position & velocity numbers being generated and tested at the STTF

ACS Subsystem

- Open Issues (Continued)
  - -Y solar array
    - » Contingency Tables (#54 & #66) to relieve torque imbalances due to failed array or when array is parked have been tested & generated
    - » Contingency plan to fire one-shot thruster pulses if array fails and momentum builds being tested
    - » ACS NASA engineers reviewing FDC limits that might change with parking the -Y Solar Array
    - » ACS NASA engineers finishing High Fidelity tests of parked array with yaw maneuver and failed reaction wheel
    - » Parameters Table #76, with 30° feather position, being tested by FSW
    - » Outline for solar array parking being finalized

FDS Subsystem

- Q-starts, Flywheels(3), MS ‘Not Present’
- Four Invalid Stream Ids in 5 days from VIRS
- Framer error on 99-096

C&DH Subsystem

- One EDAC multi-bit error
- Two UTCF adjustments performed: 99-102 and 118
- Open Issues
  - Bulk Memory Mapping
    - » Modifying XTE contingency procedure
  - FS Adjust Limiting
    - » Is there a limit to adjustments?

RF Subsystem

- Frequencies stable: XP2 drifting in positive direction

Power Subsystem

- Batteries operated below 100% SOC from 99-103 to 99-114
- Open issues
  - Change charge settings for future solar array scenerio
  - Update C/D trending to include SA data
- Open Anomalies
  - #55: Battery 2 Cell 1 Hitting YH and RH limits

LIS Instrument

- Nominal currents, voltages, and temperatures
- MSFC requested real-time commanded reset performed on 99-106
- LIS Data Management Team Consolidated Monthly Report now forwarded to GSFC

CERES Instrument

- Next turn on scheduled May 17 - 19 for Hawaii ground test
- Open issues
  - Awaiting signature on Anomaly #69: CERES DAAHigh Voltage on +15 V converter
  - CERES removal from load-shed work begun
    - » In process of reviewing test plan and RTS loads

VIRS Instrument

- Voltages and temperatures are nominal
- VIRS Reset occurred on 99-104
- Solar Calibrations were performed 99-104
- Anomaly Report #56 (VIRS Reset) is still open
- One year plots have all been reviewed
  - No outstanding issues

TMI Instrument

- All temperatures, currents, and voltages are within limits
- No Open Issues

PR Instrument

- All temperatures, currents, and voltages are within limits
- No NASDA command requests for the month of April
- Closed Issues
  - TIL-1205J closed : Provided NASDA with updated pointing accuracy values
  - Provided NASDA with mission life analysis using fuel consumption
- No Open Issues

Ground System

- 2 Event Reports
  - #100: TR1XT1 crashed on 99-102 causing failover
  - #101: Low quality data on 2 TDW events (99-102) required WSC failover
- Required Critical event on 99-104 to avoid recorder overflow
- 2 9GB drives added to GTAS
- Oscilloscope has been calibrated and returned

Y2K

- End-to-End test delayed due to XTE problems (May 19&20)
- String 3 waiting for completion of End-to-End test to enter operational testing
- Two Y2K change requests
  - Four critical DRs
  - Secure shell to the MOC for TSDIS